Department of Defense

INSTRUCTION

February 21, 1995
NUMBER 6055011

USD (A&T)

SUBJECT : Protection of DoD Personnel from Exposure to Radiofrequency Radiation and Military Exempt Lasers

References: (a) DoD Instruction 6055.11, "Protection of DoD Personnel from Exposure to Radiofrequency Radiation, " August 20, 1986 (hereby canceled)
(b) DoD Instruction 6050.6, "Exemption for Military Laser Products, " May 1, 1978 (hereby canceled)
(c) DoD Directive 1000.3, "Safety and Occupational Health Policy for the Department of Defense, " March 29, 1979
(d) Institute of Electrical and Electronics Engineers (IEEE) C95. 1-1991 , "IEEE Standard for Safety Levels with Respect to Human Exposure to Radiof requency Electromagnetic Fields, 3 kHz to 300 GHz, " April 27, 1992
(e) through (k) , see enclosure 1

A. REISSUANCE AND PURPOSE

This Instruction:

1. Reissues reference (a) , incorporates and cancels reference (b) , supplements reference (c) , adopts the RF exposure guidelines in reference (d), and updates procedures for protection of personnel from radiofrequency electromagnetic fields (RF EMF) .

2. Establishes policy and assigns responsibilities, pursuant to reference (c) , for individual military laser products that are exempt from the radiation safety performance standards set forth in reference (e) . The exempt ion is set forth in enclosure 2 and amended by enclosure 3.

B. APPLICABILITY AND SCOPE

This Instruction:

1. Applies to the Office of the Secretary of Defense (OSD) , the Military Departments, the Chairman of the Joint Chiefs of Staff, the Unified Combatant Commands, the Uniformed Services University of the Health Sciences, the Defense Agencies, and the DoD Field Activities (hereafter referred to collectively as "the DoD Components") .

2. Applies to all DoD civilian and military personnel who may be exposed to RF EMF, except for patients undergoing diagnostic or therapeutic procedures in medical and dental treatment facilities.

3. Applies to operations during peacetime, and to the maximum extent possible during wartime, to limit personnel exposure to RF EMF. It is recognized that during-war or combat operations, requirements in this Instruction may not be feasible.

4. Applies to laser products that are used exclusively by DOD Components and are (a) designed for actual combat or combat training operation; or are (b) classified in the interest of national security. Its provisions do not apply to laser products intended primarily for indoor classroom training and demonstration, industrial operations, scientific investigation, or medical application.

c. **DEFINITIONS**

Terms used in this Instruction are defined in *enclosure* 4.

D. **POLICY**

It is DoD policy to:

1. Identify, attenuate, or control by engineering design, protective equipment, administrative actions, *or* a combination thereof, hazardous RF EMF and other dangers associated with DoD electronic equipment. That policy shall be emphasized during all phases of equipment design, acquisition, installation, operation, and maintenance.

2. Limit personnel RF exposure to levels that are within the permissible exposure limit (PEL) in enclosure 5.

3. Define and control areas in which RF exposure to personnel could exceed the PEL, including simultaneous exposure from more than one RF emitter.

4. Ensure personnel are aware of potential RF exposures in their workplaces and duty assignments, and the control measures imposed to limit their RF exposures.

5. Investigate and document RF overexposure incidents.

6. Comply with as many of the laser safety standards set forth in reference (e) as practicable.

E. RESPONSIBILITIES

1. The Deputy Under Secretary of Defense for Environmental Security as the DoD *'Designated Agency Safety and Health Official," shall:

a. Provide policy and guidance on RF and laser protection matters in the Department of Defense.

b. Serve as the principal point of contact with Federal Agencies on RF and laser protection matters.

c. Establish, as an integral element of the Defense Environmental Security Council (DESC) and related Board and Committee structure, the Tri-Service Electromagnetic Radiation Panel (TERP) , which serves as a resource of resident expertise in coordinating and addressing RF exposure and biological research issues, and the Laser System Safety Working Group (LSSWG) as a resource of expertise in laser issues.

2. The Heads of the DoD Components shall establish and maintain RF EMF and laser protection programs under the cognizance of the DoD Components' designated "Safety and Occupational Health Officials" to carry out this Instruction. Such programs shall include the minimum requirements in enclosure 5.

F. PROCEDURES

The RF and laser protection program of the DoD Components shall include the elements described in enclosures 5 and 6.

G. EFFECTIVE DATE

1. This Instruction is effective immediately. Detailed implementing instructions are only necessary to provide for any DoD Component-unique situations.

2. DoD Components must satisfy their bargaining obligations with unions under U.S.C. Chapter 71 prior to implementing any changes generated by this Instruction. The Instruction does not supersede any existing collective bargaining agreement until the agreement expires and the bargaining obligation is fulfilled.

Paul J. Kaminski

Paul G. Kaminski

Enclosures - 8
1. References

2. Letter of Exemption
3. Letter Amending Exemption
4. Definitions
5. DoD RF and Laser Program Elements
6. Application and Measurements
7. RF Hazard Warning Signs
8. Sample Laser Exemption Notification

REFERENCES, continued

(e) Title 21, Code of Federal Regulations, Part 1040, "Performance Standards for Light-Emitting Products"

(f) DoD 4160.21-M-1, "Defense Demilitarization Manual," October 1981, authorized by DoD Directive 4160.21, December 5, 1980

(g) National Council on Radiation Protection (NCRP), Publication No. 119, "A practical Guide to the Determination of Human Exposure to Radiofrequency Fields," 1993

(h) American Conference of Governmental Industrial Hygienists (ACGIH), "Threshold Limit Values (TLVs) and Biological Exposure Indices for 1992-1993," 1992

(i) American National Standards Institute (ANSI) C95.2-1981, "American National Standard Radio Frequency Radiation Hazard Warning Symbol," 1981

(j) Institute of Electrical and Electronics Engineers (IEEE) C95.3-1991, "IEEE Standard Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave," August 21, 1992

(k) MIL-STD-882C, "System Safety Program Requirements, " January 19, 1993

DEPARTMENT OF HEALTH. EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
FOOD AND DRUG ADMINISTRATION
ROCKVILLE, MARYLAND 20852

JUL 29 1976

Mr. George Marienthal
Deputy Assistant Secretary of Defense
Environment and Safety
Department of Defense
Washington, D.C. 20301

Dear Mr. Marienthal:

This letter will respond to your letter of July 2. 1976, to the Director of the Bureau of Radiological Health of the Food and Drug Administration requesting an exemption from the FDA radiation safety performance standard for laser products (21 CFR §§ 1040.10 and 1040.11) which becomes effective on August 2, 1976.

Under the authority delegated to me by the Assistant Secretary for Health of the Department of Health, Education, and Welfare (21 CFR § S. 1), pursuant to sections 358 and 360B of the Public Health Service ACt, as amended by the Radiation Control for Health and Safety Act of 1968 (42 U.S.C. § 263f and 263j), I hereby exempt from the provisions of 21 CFR 881040.10 and 1040.11, and from the provisions of 21 CFR Part 1002 (except § 1002.20). laser products thst are used exclusively by Department of Defense components and that are designed for actual combat or combat training operations or are classified in the interest of national security.

It is my understanding that this exemption is necessary because laser product. that are to be used by the military for the purposes stated above require capabilities which do not lend themselves to full compliance with all provisions of the laser standard promulgated under the Act. Your request for exemption acknowledges thet in most instances the specified defense mission for which the products are intended could not be fulfilled if total compliance with the standard were required.

In recommending that your request for exemption be granted, the Bureau of radiological Health considered the laser user safety and control procedures utilized by the Department of Defense. These include: for the U.S. Army, AR 40-5, Health and Environment , 25 September 1974; AR 40-46, Control of Health Hazards from Lasers and Other High Intensity Optical Sources, 6 February 1974; TB MED 279, Control of Hazard to Health from Laser Radiation, 30 May 1975; for the U.S. Air Force, AF Manual 161-32, Laser Health Hazards Control, 20 April 1973; and for the U.S. Navy ANSI 136.1,. 1973, American National Standard for Safe Use of Lasers. Additional control

procedures utilized by the Department of Defense include: operator training in the safe use of tactical equipment, performing an in-depth "hazard analysis of such equipment during various stages of its life cycle, a hazard analysis of training and testing sites, and routine surveys of such equipment located at military installations.

The granting of this exemption is also based upon the understanding that the Department of Defense will establish monitoring procedures to assure that (1) only laser products designed expressly for actual combat operations or combat training operations and laser products classified in the interest of national defense will be procured or manufactured by the Department of Defense pursuant to the requested exemption, and (2) the Department of Defense will maintain a permanent record of the status of all exempted laser products, including their ultimate disposition. The products will not be disposed of through excess or surplus property channels without advance authorization by the FDA.

As a further condition of this exemption, the Department of Defense has also agreed to provide an annual report to FDA summarizing the internal records maintained on the exempted products, identifying types of laser products and manufacturers. Furthermore, Department of Defense procurement specifications for such exempted products will include, to the extent practicable, the radiation safety provisions of the applicable Federal standard (21 CFR 1040.10; 1040.11) unless adequate alternative controls are to be provided by the Department of Defense. Amy substantive amendments to the radiation safety procedures enclosed with your letter of July 2,1976 will be submitted to the FDA for review.

All exempted products are also to be clearly identified either by the label set forth below, or by other means;

CAUTION

This electronic product has been exempted from FDA radiation safety performance standards prescribed in the Code of Federal Regulations, Title 21, Chapter I, Subchapter J, pursuant to Exemption No. _____ issued on _____. This product should not be used without adequate protective devices or procedures.

We request, as a term of this exemption, that the Department of Defense list in the annual report to this Agency. All exempted products which are identified by means other than by the above label, and provide detailed Information as to the alternative means of identification provided, and the bases for such alternative means of identification.

This" exemption is granted upon the understanding that all of the, ● bove commitments, set forth in your letter of July 2, 1976, ● *re fulfilled* by the Department of Defense. The ● xemption may be withdrawn or ● mended if any of those terns ● re not ● dtired to , *or* if other information becomes ●vailable that indicates that the public health and safety are not adequately protected from electronic product radiation emitted by products ● xempted pursuant to this authorization.

This exemption shall be ref ● rred to as Exemption No. 76EL-01DOD issued on July 26, 1976, ● nd any correspondence concerning its implementation should be directed to the Director of the Bureau of Radiological Health. A copy *of* your July 2, 1976 letter requesting the ● x=ption (with ● t tachments) and this notice of ● pproval will be filed in the FDA Public Records and Documents Center, Room 4-62, 5600 Fishers Lane, Rockville, kill.

We ● ppreciate your cooperation in this matter.

Sincerely yours,

Sherwin Gardner
Acting Commissioner of Food and Drugs

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food ● wl Drug Administration
Rockville MD 20857

MAR 1 8 1986

George W. Siebert
Director of Safety ● nd
Occupational Health Policy
Office of the Assistant Secretary of De fense
Washington, D.C. 20301-4000

Ref. Doc.: 76EL-01DoD

Dear Mr. Siebert:

This letter is in response to your January 6, 1986 request for amendment of ● xemption 76EL-01DoD to ● liminete the requirement for ● ● aual report. Under this ● xemption, laser products which ● re intended to be ueed in combat or in training *for* combat were ● xempted, ● s necessary, from the performance standard for laser products as provided in 21 CFR 10 Io.5. These products were ● l-o ● xempted *from* the reporting requirements *of* 21 CFR 1002. IO ● nd 1002.12 under the ● uthority provided in 1002.51.

At the time this exempt ion was granted, the perf ormance standard *for* laser products was not yet in ● ff ● ct, ● nd the Agency could not reasonably ● nt icipate the type or magnitude *of* problems which would *be* ● *ncountered,* or the *efficacy of* the various mechanisms provided in the standard in ● ddressing these problem. The Agency ● lected ● t that time *to* maintain what was considered the minimal regulatory position consistent with ite responsibility *for* Public Health, ● nd, therefore, the ● nuel report ing requirement was retained. Now the Center has ● lmoet ten years *of* ● xperience in ● dministering these regulations, ● nd has received nine ● nnuel reports from your department. At this point in time, it is my judgment thet these reports on ● xempted products ● re no longer needed as ● monitoring tool.

Theref ore, ● provided by 21 CFR 1010.5(e)(2), the Department *of* Def ● nse (DoD) exemption is hereby emended to revoke the requirement for en ● mul report. The ● ff ● ctive date of this ● mendment is September 1, 1965. Please note that while DoD will no longer *aced* to ● uhit the subject ● nnual reports, it will ● till be ● xpected to maintain the types of records on which this report was b-cd. This inf ormation may be requested when we *aced to* confirm ● *manufacturer's* claim that be is producing laser products for DoD procurement and that his products ● e indeed subject to ● xemptioa. Your continued close cooperation in providing pertinent information upon request is recognized ● d ● ppreciated, ● nd, of course, ● uch requests till be limited to information which doee not impact on national security.

X trust that thie resolution *of* the issues satisfactorily addresses your concerns.

Sincerely yours,

John C. Villforth
Director
Center for Devices and
Radiological Health

DEFINITIONS

1. **Averaging Time (T_{avg})** - The time period over which exposure is averaged for determining compliance with a PEL value.

2. **Controlled Environment**. Locations where RF exposures may exceed the levels given in table 6-2-1, but do not exceed the levels in table 6-1-1 (enclosure 6, attachment 6-l). Generally, controlled environments represent areas that may be occupied by personnel who accept potential exposure as a concomitant of employment or duties, by individuals who knowingly enter areas where such levels are to be expected, and by personnel passing through such areas. Existing physical arrangements or areas, such as fences, perimeters, or weather deck(s) *of* a ship may be used in establishing controlled environments.

3. **Electric Field Strength (E)**. The magnitude of the electric field component of an electromagnetic wave expressed in units of volts per meter (V/m) .

4. **Exposure, Partial Body**. Partial-body *exposure* results when RF EMF are substantially nonuniform over the body. Fields that are nonuniform over volumes comparable to the human body occur due to highly directional sources, re-radiating sources, standing waves, or in the antenna's near-field *region.*

5. **Far-Field Region**. The region far enough from an antenna that the radiated power per unit area decreases with the square of the range. In the far-field region, the field has a predominantly plane-wave character; i.e., uniform distributions of electric and magnetic fields in planes transverse to the direction of propagation.

6. **Fluence**. The energy density of the EMF when integrated over the duration of the exposure, usually expressed in units of joules per square centimeter (J/cm^2).

7. **Hertz (Hz)**. The unit for expressing *frequency. One* hertz equals one cycle per second. Commonly used multiples are kilohertz (kHz), megahertz (MHz), and gigahertz (GHz).

8. **Human Resonance Range**. The frequency region where absorption of RF energy in the body as a whole is enhanced. For sizes ranging from a baby to an adult, peak absorption varies depending on the individual's size relative to the wavelength and orientation relative to the polarization of the field. The PELs have been established to cover the range of human sizes, shapes, and positions.

9. **Magnetic Field Strength (H)**. The magnitude of the magnetic field component of an electromagnetic wave expressed in units of amps per meter (A/m) .

10. **Mathematical Expressions.** Standard notations are used in the text and the tables to show operations, such as, a/b to mean b divides a, *ab* or *a* (b) or (a) (b) to mean a multiplies b, a^b to mean a raised to the *bth* power, and the symbol < to mean less than.

11. **Near-Field Region.** A region generally in close proximity to an antenna or other radiating structure in which the electric and magnetic fields do not exhibit a plane-wave relationship, and the power does not decrease with the square of distance from the source but varies considerably from point to point. The near-field region is further subdivided into the reactive near field, which is closest to the radiating structure and contains most or nearly all of the stored energy, and the radiating near field, where the radiating field predominates over the reactive field but lacks substantial plane-wave character and is complicated in structure. (For most antennas, the outer boundary of the reactive near-field region is considered to occur at a distance *of* one-half wavelength from the antenna surface.)

12. **Permissible Exposure Limit (PEL).** The *PEL is* established for the protection of personnel. There are no expectations that any adverse health effects will occur with exposures that are within the PEL, even under repeated or long-term exposure conditions. In controlled environments, where restrictions on access may be implied, the PEL is based on maintaining exposures below a SAR of 0.4 W/kg. That level incorporates a safety factor of 10 below a SAR of 4 W/kg that is considered as a threshold, above which, there is an increasing possibility for adverse biological effects, but at or below which, there is no established evidence *of* any harm to health. In uncontrolled environments, where access is not restricted, lower levels (equivalent to a SAR of 0.08 W/kg) have been adopted over the human resonance range as a consensus for maintaining lower exposure levels in public areas. Since SAR is not an easily measured quantity, PELs are given in terms of measurable field parameters E, H, or S as a means for demonstrating compliance with SAR.

13. **Plane Wave.** An EM wave characterized by mutually orthogonal electric and magnetic fields that are related by the impedance of free space (377 ohms). *For* plane waves, S, E, and H exhibit the following relationship: $S = E^2/3770 = 37.7\ H^2$, where S is in units of mW/cm^2, E is in V/m, and H is in A/m.

14. **Power Density (S).** Radiated power per unit area, expressed in units of watts per square meter (W/m^2) *or* milliwatts or microwatt per square centimeter (mW/cm^2 or $\mu W/cm^2$). The term, plane-wave-equivalent power density, refers to the magnitude of S that would exist for an EM wave in free space having the same E or H fields.

15. **Radio Frequency (RF).** The RF region is defined as extending from 3 kHz to 300 GHz.

16. Re-Radiated Field. EMF resulting from currents induced in a secondary, predominantly conducting object by EM waves incident on that object from one or more primary radiating structures or antennas. Re-radiated fields are sometimes called reflected or scattered fields. The scattering object is sometimes called a re-radiator, or a secondary or parasitic radiator.

17. RF "Hot Spot." A highly localized area of relatively intense RF EMF that manifests itself as:

a. Intense electric or *magnetic* fields immediately adjacent to conductive objects immersed in lower intensity ambient fields, or

b. Localized areas where there exist a concentration of RF fields caused by reflections or narrow beams produced by high-gain radiating antennas *or* other highly directional sources.

c. For both descriptions, the fields are characterized by very rapid changes in field strength. RF hot spots are normally associated with very nonuniform exposure of the body (partial-body exposure). The term RF hot spots should not be confused with an actual thermal hot spot in an absorbing body.

18. Root-Mean-Square (rms). The effective value, or the heating value, of a periodic EM wave. The rms value for E or H fields is obtained by taking the square root of the mean of the squared values for E or H over an area equivalent to the vertical cross-section of the human body (projected area).

19. Specific Absorption Rate (SAR). The time rate at which RF energy is imparted to an element of biological body mass. Average SAR in a body is the time rate of the total energy absorbed divided by the total mass of the body. SAR is expressed in units of watts per kilogram (W/kg). Specific absorption (SA) refers to the amount of energy absorbed over an exposure time period and is expressed in units of joules per kilogram (J/kg).

20. Uncontrolled Environments. Locations where RF exposures do not exceed the PELs in table 6-2-1 (enclosure 6, attachment 6-2). Such locations generally represent living quarters, workplaces, or public access areas where personnel would not expect to encounter higher levels of RF energy.

DOD RF AND LASER PROGRAM ELEMENTS

1. **RF PEL.** No practice shall be adopted or operation conducted involving planned exposure of personnel to RF levels in excess of the applicable PEL.

a. RF PELs are derived from the recommended exposure levels in American National Standards Institute (ANSI)/IEEE C95.1-1992, which is published as IEEE C95.1-1991 (reference (d)), and serves as a consensus standard developed by representatives of industry, scientific communities, Government Agencies, and the public.

b. The basic dosimetric parameter for RF exposure is a whole-body specific absorption rate (SAR) of 0.4 watts per kilogram (W/kg). That level incorporates a safety factor of 10 below a SAR of 4.0 W/kg, which has been determined to be a threshold for occurrence of potentially deleterious biological effects in people. PELS are given in terns *of* measurable field parameters as a convenient correlation to the SAR.

c. For human exposure to RF EMF from 3 kHz to 300 GHz, the PELs, in terms of root-means-square (rms) electric (E) and magnetic (H) field strengths, plane-wave equivalent power densities (S), and induced body currents that can be associated with exposures to such fields, are given in tables 6-1-1 and 6-2-1 (enclosure 6, attachments 6-1 and 6-2) for both controlled and uncontrolled environments.

(1) Controlled environments are areas where exposure levels may exceed the values in table 6-2-1, but do not exceed the values in table 6-1-1 (enclosure 6, attachments 6-2 and 6-1). Exposures associated with a controlled environment include the following:

(a) Exposure that may be incurred by personnel who are aware of the potential for RF exposures as a concomitant *of* employment or duties.

(b) Exposure of individuals who knowingly enter areas where higher levels can reasonably be anticipated to exist.

(c) Exposure that may occur incidental to transient passage through such areas.

(2) Uncontrolled environments are locations where exposure levels are less than the values given in table 6-2-1 (enclosure 6, attachment 6-2). Such environments include living quarters, workplaces, or public areas where there are no expectations that higher RF levels should be encountered.

d. The PELs for controlled environments in table 6-1-1 (enclosure 6, attachment 6-1) are based on scientifically derived

values to limit the absorption of electromagnetic energy in the broader human resonance frequency range of 100 kHz to 6 GHz, and to restrict induced currents in the body to limit the localized SAR occurring in the feet, ankles, wrists, and hands of personnel. For uncontrolled environments, further reduction occurs in table 6-2-1 (enclosure 6, attachment 6-2) to control RF levels in areas of domicile and workplaces that are not associated with RF emitters. That reduction is not based on lessening any known adverse health effect, but is a consensus designed to maintain lower exposure levels outside of well-defined areas. The basis and the rationale for the PELs in controlled and uncontrolled *environments* are addressed in IEEE C95.1-1991 (reference (d)). Refer also *to* National Council on Radiation Protection (NCRP) Publication No. 119 and American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) (references (g) and (h)) for additional information on RF EMF.

e. Relaxation *of* the whole-body averaged PELs given in tables 6-1-1 and 6-2-1 (enclosure 6, attachments 6-1 and 6-2) is allowed for partial-body exposure conditions or through application *of* the SAR exclusion rule or the low-power device exclusion rule as specified in subsection B.6. *of* enclosure 6.

f. Additional RF exposure limits or exposure restrictions are not imposed in case of pregnancy.

2. EMF Exposure Guidance for High Power Microwave (HPM) and Electromagnetic Pulse (EMP) Simulators

a. HPM Systems. For exposure in controlled environments involving HPM narrow-band systems, the exposure limit for any single pulse or series of pulses lasting less than 10 seconds is given in table 6-3-1 (enclosure 6, attachment 6-3). For uncontrolled environments, exposure shall conform with the PELs in table 6-2-1 (enclosure 6, attachment 6-2).

b. EMP Simulator Systems. For exposure in controlled environments involving broad-band EMP simulators, the exposure limit is given in table 6-3-1 (enclosure 6, attachment 6-3). For uncontrolled environments, exposure shall conform with the PELs in table 6-2-1 (enclosure 6, attachment 6-2) .

3. RF Warning Signs

a. The RF hazard warning sign format in figure 7-1 of enclosure 7 is derived from the RF warning symbol published in ANSI C95.2-1982 (reference (i)). Variations to include subdued signs for camouflage or tactical reasons, or to provide improved visibility under certain lighting conditions, are authorized, provided the general layout of the sign remains the same.

b. RF warning signs are required at all access points in which levels exceed the controlled environment PELs listed in table 6-1-1 (enclosure 6, attachment 6-l). Where the RF levels exceed the uncontrolled environment PELs given in table 6-2-1 (enclosure 6, attachment 6-2), RF warning signs should be posted in areas as determined by safety, engineering or occupational health professionals. Instructional or warning statements should be inserted on the signs. Examples of such statements are shown in figure 4-1 of enclosure 4. In concert with safety and occupational health professionals, commanders may waive the requirement for signs when necessary in response to military operational considerations provided personnel are informed of possible hazards by other means.

c. In areas where access to levels greater than 10 times the controlled environment PELs may exist, warning signs alone do not provide adequate protection. Other warning devices, such as flashing lights, audible signals, barriers, or interlocks, are required depending on the potential risk of exposure.

4. **RF Protective Clothing.** RF protective clothing is not authorized for routine use as a means of *protecting* personnel. Protective equipment, such as electrically insulated gloves and shoes for protection against RF shock and burn or for insulation from the ground plane, is authorized where necessary for compliance with the induced current limits of tables 6-1-1 and 6-2-1 (enclosure 6, attachments 6-1 and 6-2).

5. **Investigation of RF Incidents**

a. Each DoD Component shall investigate and document incidents involving personnel exposure that may exceed the PELs given in table *6-1-1* (enclosure 6, attachment 6-l), after including adjustments to the PEL, such as, spatial and time averaging, partial-body exposure, etc., as discussed in the application and measurement sections in enclosure 6.

b. For personnel exposures occurring at, or above, five times the adjusted PELs in table 6-1-1 *(enclosure 6,* attachment 6-l), the following additional actions are required:

(1) RF EMF measurements for documentation of the RF exposure that may have been received.

(2) Medical examination and recommendations for medical followup.

(3) Documentation providing a description of the circumstances surrounding the exposure incident, statements from personnel involved in that incident, and recommendations to prevent similar occurrences.

c. The DoD Components shall maintain a repository file for all investigations of exposure incidents in which personnel were exposed to RF levels in excess of five times the table 6-1-1 adjusted PELs (enclosure 6, attachment 6-1) .

6. **RF Safety Training**. DoD personnel who routinely work directly with equipment that emits RF levels in excess of the PELs in table 6-1-1 (enclosure 6, attachment 6-l), or whose work environment contains equipment that routinely emits levels in excess of the PELs in table 6-1-1 (enclosure 6, attachment 6-l), shall receive training so that they are aware of the potential hazards of RF, established procedures and restrictions to control RF exposures, and their responsibility to limit their exposures. Training shall be conducted before assignment to such work areas. Refresher training should be given and may be incorporated into other periodic safety training programs.

7. **Measurement and Evaluation of RF Fields**. The DoD Components should evaluate RF hazards using the measurement procedures and techniques recommended in IEEE C95.3-1991 (reference (j)), as basic guidance. That requirement does not preclude using other RF measuring and evaluation methodologies.

a. Records of surveys, reports, calculations, and control measures imposed shall be maintained for each fielded RF emitter which is capable of exceeding the PELs in table 6-2-1 (enclosure 6, attachment 6-2).

b. Where multiple RF emitters may be collocated in fixed arrangements, such as aboard ships or at communication sites, RF evaluation data should include a determination of the weighted contribution *from* expected simultaneously operated emitters to ensure that personnel are not exposed to effective RF levels above the PEL.

8. **RF Bioeffects Research**. Biomedical effects research of EMF by the DoD Components shall be coordinated with the TERP.

9. **Research and Development.** The DoD Components involved in research, development, testing, and evaluation (RDT&E), and in acquisition of RF generating equipment shall identify RF control requirements and incorporate protection measures or identify operational restrictions before fielding. System safety studies pursuant to MIL-STD-882C (reference (k)) shall use the PELs of enclosure 6.

10. **Operational RF Systems**. The DoD Components shall include RF safety and occupational health requirements in technical orders, handbooks, manuals," and other publications about siting, operation, and maintenance of RF sources and equipment. Installations operating applicable RF emitters shall maintain documentation defining locations categorized as "RF controlled and uncontrolled environment s."

11. Laser Exemptions. Identify laser products that are covered by the exemption and establish procedures to assure that only those lasers so identified are manufactured or procured pursuant to the exemption.

12. Laser Procurement. Include safety provisions in procurement specifications, as required by the exemption, and perform safety studies and reviews of exempt lasers. Provide a written notification to the manufacturer for each laser product that is covered by the exemption. A sample notification is at enclosure 8. The manufacturer shall be required to label each exempt laser with the "caution" specified in the sample notification.

13. Laser Inventory. Maintain inventory control and a permanent record of the status of all exempted laser products, including their ultimate disposition.

14. Excess Lasers. Report excess lasers to the Defense Reutilization and Marketing Service (DRMS) for utilization screening within the Department of Defense. The reporting DoD Component shall maintain accountability during the screening period. Transfer of excess shall be made directly between the gaining and losing organizations. Identify supply system requirements for usable parts after utilization screening is completed; remove and return required parts to the system. Dispose of exempted lasers in accordance with DoD 4160.21-M-1 (reference (f)). No disposal of potentially usable lasers or laser parts through utilization outside of the Department of Defense, donation, or sale shall be made without the prior approval of the DUSD(ES) or his/her designee.

APPLICATION AND MEASUREMENTS

A. Guidance on measuring procedures and techniques for evaluating hazards from RF sources are in the following IEEE standards that are available for purchase from the Institute of Electrical and Electronics Engineers, Inc., Customer Service, 445 Hoes Lane, Piscataway, NJ 08854-1331, telephone (800) 678-IEEE:

1. IEEE C95.1-1991 (reference (d)). Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz (order number SH-14878).

2. IEEE C95.3-1991 (reference (i)). Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave (order number SH-14886).

3. The guidance in references (d) and (j), or in the application and measurement sections , below, that is derived from reference (d) , is not intended to preclude use of other appropriate RF hazard measuring and evaluation methodologies.

B. SECTION A., TABLES 6-1-1 AND 6-2-1 OF ATTACHMENTS 6-1 AND 6-2

1. The PELs refer to time-averaged exposure values obtained by spatial averaging of S or the mean squared E and H values over an area equivalent to the vertical cross-section *of* the human body (projected area) . In nonuniform fields, spatial peak values could exceed the PELs even though the spatially averaged value does not exceed the PELs. Spatial peak values are limited by the partial-body PELs given in section L). of tables 6-1-1 and 6-2-1 (attachments 6-1 and 6-2).

2. For exposures at frequencies less than 300 MHz, the applicable PEL is given in terms *of rms E* or H values. Although not technically correct under near-f ield conditions, PELs also may be expressed in terms *of* plane-wave-equivalent values as shown by the S values in parentheses for the E and *H* fields, respectively, at frequencies less than 100 MHz.

3. The PELs in section A. of table 6-1-1 (attachment 6-1) refer to values averaged over any 6-minute period for frequencies less than 15 GHz, and over shorter periods for higher frequencies *(e.g.,* 10 seconds at 300 GHz). The PELs in section A. of table 6-2-1 (attachment 6-2) *refer to* values generally averaged over any 6-minute or 30-minute period for frequencies less than 3 GHz. For certain frequency intervals, the averaging period will vary as a function of frequency as shown in section A. *of* tables 6-1-1 and 6-2-1 (attachments 6-1 and 6-2) .

4. *For exposure* durations less than the averaging, period, the maximum permissible exposure level, PEL' , in any time interval equal to the averaging period is, PEL' = PEL $[T_{avg}/T_{exp}]$,

where T_{exp} *is* the exposure duration in that interval expressed in the same time units as T_{avg}.

5. Measurements to determine adherence to the PEL should be made at distances of at least 20 centimeters (cm) or greater from any reradiating objects or reflective surfaces.

6. The PEL values may be relaxed in the case of partial-body exposure, or by reference to the SAR exclusion rules, or the low-power device exclusion rules, as follows:

a. **Partial Body Exposure.** In the case of partial-body exposure conditions from highly directional sources or from substantially nonuniform fields over an area equivalent to the body, relaxation of the PELs of section A. of tables 6-1-1 and 6-2-2 (attachments 6-1 and 6-2) is allowed for exposures limited to a portion of the body. Maximum values for partial-body exposures limits are in section D. of tables 6-1-1 and 6-2-1 (attachments 6-1 and 6-2). Partial-body limits do not apply in the case of direct exposure to the eyes.

b. **SAR Exclusion Rule.** The PELs in section A. of tables 6-1-1 and 6-2-1 (attachments 6-1 and 6-2) may be relaxed by reference to SAR limits through calculations or measurements, as follows:

(1) **Controlled Environment Exclusion**

(a) At frequencies between 3 kHz and 100 kHz, the PEL can be exceeded, if it can be shown that the peak rms current density as averaged over any 1 cm^2 area *of* t is sue and over 1 second does not exceed O. 035 (f) mA/cm^2 where f is in kHz.

(b) At frequencies between 100 kHz and 6 GHZ, the PEL may be exceeded if the exposure conditions can be shown to produce SARS below 0.4 W/kg as averaged over the whole body, and spat ial peak SAR values not exceeding 8 W/kg as averaged over any one gram of tissue; except for the hands, wrists, feet, and ankles where the spat ial peak SAR shall not exceed 20 W/kg as averaged over any 10 grams of tissue, and the induced body currents conform with the values in section B. of table 6-1-1 (attachment 6-1) .

(c) At frequencies above 6 GHz, where body absorption is quasi-optical and body resonance considerations do not apply, the PELs may be relaxed using the time-averaged limits for partial-body exposures given in section D. of table 6-1-1 (attachment 6-1) .

(2) **Uncontrolled Environment Exclusion**

(a) At frequencies between 3 kHz and 100 kHz, the PEL can be exceeded, if it can be shown that the peak rms

current density as averaged over any 1 cm^2 area of tissue and over 1 second does not exceed 0.0157(f) mA/cm^2 where f is in kHz.

(b) At frequencies between 100 kHz and 6 GHZ, the PEL may be exceeded if the exposure conditions can be shown to produce SARS below 0.08 W/kg as averaged over the whole body, and spatial peak SARS not exceeding 1.6 W/kg as averaged over any one gram of tissue; except for the hands, wrists, feet, and ankles where the spatial peak SAR shall not exceed 4 W/kg as averaged over any 10 grams of tissue, and the induced body currents conform with the values in section B. of table 6-2-I (attachment 6-2).

(c) At frequencies above 6 GHz, where body absorption is quasi-optical and body resonance considerations do not apply, the PELs may be relaxed using the time-averaged limits for partial-body exposures given in section D. of table 6-2-1, attachment 6-2.

c. Low-Power Device Exclusion. At frequencies between 100 *kHz* and 1.5 GHz, the PELs given in tables 6-1-1 and 6-2-1 (attachments 6-1 and 6-2) may be exceeded under the following conditions for devices in which the radiating structure is not maintained within 2.5 cm of the body:

(1) Cent rolled environment low-power device exclusion pertains to devices that emit RF energy under the control of an aware user. That exclusion addresses exposure of the user.

(a) *At frequencies between* 100 kHz and 450 *MHZ,* the PEL may be exceeded if the radiated power is 7 watts, or less.

(b) At *frequencies* between 450 and 1500 MHZ, the PEL may be exceeded if the radiated power is (7) (450/f) watts, or less, where f is in MHz.

(2) Uncontrolled environment low-power device exclu- s ion pertains to devices that emit RF energy without cent rol or knowledge of the user.

(a) At frequencies between 100 kHz and 450 MHZ, the PEL may be exceeded if the radiated power is 1.4 watts, or less.

(b) At frequencies *between* 450 and 1500 MHz, the PEL may be exceeded if the radiated power is (1.4) (450/f) watts or less, where *f is* in MHz.

7. In applying the PELs listed in tables 6-1-1 and 6-2-1 (attachments 6-1 and 6-2) for different situations, such as characterizations of the EMFs, determining the PEL safe distances

or assessment of personnel exposures, different measurement considerations may be applied as follows:

a. **RF Field Characterization.** For reactive near-field conditions, generally both the E and H fields must be determined for frequencies less than 300 MHz. For frequencies equal to or less than 30 MHz, that can only be accomplished by measurement of both field strengths. The need to measure both E and H fields below 300 MHZ derives from a consideration of the spatial variation in E and H field strengths in the reactive near field of an antenna. PEL boundary locations are to be established by determining the farthest distance from the radiating source that a PEL value can be exceeded using appropriate measurement techniques for the conditions of measurements.

b. **Assessment of Personnel Exposure.** In determining whether a person has received exposure in excess of the PEL, exposure averaging times and whole-body spatial averaging are important factors in making the assessment. Under certain conditions, measurement of the vertical E field component rather than the total E field may be used for determining compliance in terms of whole-body-averaged SARs. For low-power devices, such as hand-held, mobile, and *marine* transmitters, the low-power exclusion criteria of paragraph B.6.c., above, can be used in assessing exposure conditions. Even though those low-power devices may have localized fields that exceed the PEL field values, the actual whole-body or spatial peak SARs will not be exceeded.

8. For mixed or broadband fields *at a number of* frequencies for which there are different values of the PEL, the fraction of the PEL in terms of E*, H*, or S incurred within each frequency interval should be determined and the sum of all such fractions should not exceed unity. A detailed example for that type of calculation is in Appendix C of IEEE C95.1-1991 (reference (d)) .

C. SECTION B., TABLES 6-1-1 AND 6-2-1 OF ATTACHMENTS 6-1 AND 6-2

1. Guidance is provided for limiting the RF induced currents (averaged over any 1 second) in the human body for free-standing conditions (no skin contact with metallic objects); and under conditions of grasping contact with metallic bodies to limit the maximum RF current through an impedance equivalent to that *of* the human body.

2. For controlled environments, adherence to the induced body current limits will prevent localized SAR in the ankles or wrists from exceeding 20 W/kg. For uncontrolled environments, where individuals would not be aware of the existence of RF currents, the values are set at levels that will not be normally perceptible to individuals. In general, between 3 kHz and 100 kHz , the perception threshold is related to a tingling or prickling sensation; while between 100 kHz and 100 MHz, the

perception threshold is related to a sensation of heat or warmth. Under some conditions, touching conductive objects that are in the vicinity of a radiating RF antenna could result in a flow of RF current of sufficient magnitude to be painful or that may produce a burn at the point of contact.

3. Evaluation of induced RF currents will generally require a measurement to determine the RF current flowing to ground through the feet of the individual, or the RF current flowing through the hand in contact with a conductive surface. Currents may also be measured by use of instrumentation which can simulate the electrical characteristics of the human body at the frequency of the current to assess the expected current that would flow if a person were to come into contact with a conductive object.

4. Under various exposure conditions, application of the field strength limits in section A. of tables 6-1-1 and 6-2-1 (attachments 6-1 and 6-2), in conjunction with the induced current limits in section B. of tables 6-1-1 and 6-2-1 (attachments 6-1 and 6-2), may not be consistent or amenable to analysis. Many variables, such as, near-field exposure conditions, physical contact with or close proximity to nearby conductive surfaces, RF absorption enhancement under resonance frequency conditions, inherent differences in human body sizes, will affect the measured induced currents.

a. While section A. of tables 6-1-1 and 6-2-1 (attachments 6-1 and 6-2) specify maximum time-averaged exposure field strengths, it is recommended that in those cases where RF shock and burn conditions exist, action be taken to prevent occurrence, either by reducing the induced currents or by restricting area access.

b. In controlled environments, mitigative measures can be taken to reduce the probability of hazardous conditions. Such measures may include: protective gloves, awareness programs so that individuals are alerted to the possible presence of induced currents between the human body and conductive objects, and work practices which lessen the probability of receiving unexpected shocks or burns.

c. Short or momentary exposure in which induced body currents may be above the levels in section B. of tables 6-1-1 and 6-2-1 (attachments 6-1 and 6-2), such as may *occur* while moving through or in an area near an antenna, can be permitted when conditions are not likely to cause an individual to encounter RF shock or burns from inadvertent contact with conductive surfaces.

D. SECTION C., TABLES 6-1-1 and 6-2-1 OF ATTACHMENTS 6-1 and 6-2

1. Peak power exposure limitations are provided for pulsed conditions where each pulse is less than 100 milliseconds (msec)

and there are no more than 5 pulses in the time averaging period. Those limits are given to prevent unintentionally high exposure and to preclude high SA for decreasingly short widths of pulses. If there are more than 5 pulses during any time period equal to the averaging time, or if the pulse durations are greater than 100 msec, the time-averaged S should not exceed the PELs given in section A. of tables 6-1-1 and 6-2-1 (attachments 6-1 and 6-2) .

2. For exposure to RF pulses in the frequency range of 0.1 to 300,000 MHz, exposure is limited by either a peak (temporal) E field of 100 kV/m for each pulse or in terms of a peak S value for each single pulse, whichever is more limiting. A maximum exposure to five such pulses, with a pulse repetition rate of at least 100 msec, is permitted during any period equal to the averaging time. For low frequencies and short pulses, 100 kV/m will be the more conservative limit. For high frequencies and longer pulses, peak S will be more conservative.

3. The limitation on RF fields under pulsed conditions, (less than 100 msec), means that the PEL as averaged over any 100 msec is reduced by a factor of five, and a maximum of five such pulses is permitted during any period equal to the averaging time. For example, in the microwave region for exposure to a single pulse, the SA over any 6-minute period is limited to 28.8 J/kg per pulse (spatial average) with a maximum of five such pulses (i. e., (5) (28.8 J/kg) = 144 J/kg) , which is equivalent to a SAR of 0.4 W/kg over a 6-minute period.

E. SECTION D., TABLES 6-1-1 AND 6-2-1 OF ATTACHMENTS 6-1 and 6-2

1. Implicit in the PEL definition of a whole-body averaged SAR of 0.4 W/kg for a controlled environment and 0.08 W/kg for an uncontrolled environment, is the assumption that spatial peak SARS may occur that exceed the whole-body averaged values by a factor of more than 20 times. The values provided in section D. of tables 6-1-1 and 6-2-1 (attachments 6-1 and 6-2) allow for equating substantially nonuniform field exposure or partial-body exposure to an equivalent uniform field exposure.

2. For exposure of parts of the body, the spatially averaged PELs given in section A. of tables 6-1-1 and 6-2-1 (attachments 6-1 and 6-2) may be relaxed provided the peak value of the mean squared field strength does not exceed 20 times the square of the allowed spatially averaged values at frequencies below 300 MHz, or the equivalent S levels do not exceed the levels shown in section D. of tables 6-1-1 and 6-2-1 (attachments 6-1 and 6-2) as averaged over the T_{avg} periods given for frequencies above 300 MHz.

3. The rules above for relaxation of the limits for partial-body exposure do not apply for direct exposure of the eyes, but the SAR exclusion rules in paragraph B. 6 .b., above, can still be used to show confo-ante to the PEL, despite localized S

values above the specified whole-body average. In such cases, exposures to the eyes are limited by the basic exposure criteria of a whole-body averaged SAR of 0.4 W/kg (controlled environment) or 0.08 W/kg (uncontrolled environment) , and spatial peak SARS of 8 W/kg (controlled environment) or 1.6 W/kg (uncontrolled environment) as averaged over any one gram of tissue.

F. SECTION A., TABLE 6-3-1 OF ATTACHMENT 6-3

1. The exposure guidance given is based on HPM narrow-band systems operating within the following parameters: maximum pulse width of 10 microseconds, peak S of 0.1 to 10 kW/cm^2, frequency greater than 100 MHz, repetition rate not greater than 10 pulses per second.

2. The exposure guidance is specific for HPM narrow-band systems and does not apply to exposure from EMP broad-band simulator systems. If the HPM system is not within those parameters, then the PELs in table 6-1-1 of attachment 6-1 apply.

3. For personnel exposure to HPM in a controlled environment, the measured f luence is not to exceed the values given in section A. of table 6-3-1 (attachment 6-3) for any single pulse or series of multiple pulses lasting less than 10 seconds. The total fluence delivered over any 6-minute period shall not exceed the values in section A. of table 6-3-1 (attachment 6-3). In all cases, the instantaneous E field shall not exceed 200 kV/m.

4. If the exposure values given in section A. of table 6-3-1 (attachment 6-3) cannot be met, then the total measured SA to the head shall not exceed 150 J/kg for any single pulse or 150 J/kg for multiple pulses in any 6-minute period.

G. SECTION B., TABLE 6-3- OF ATTACHMENT 6-3

Measurements of EMF from broad-band EMP simulator systems require special instrumentation and techniques because of the inherent rapid rise time and the high field strengths associated with EMP. Refer to the technical office of the DoD Components for measurement and evaluation assistance.

Attachments - 3
1. PELs for Controlled Environments
2. PELs for Uncontrolled Environments
3. PELs for HPM and EMP Simulator Systems

TABLE 6-1-1. PELS FOR CONTROLLED ENVIRONMENTS

A. RF EMF

Frequency Range (f) (MHz)	Electric Field (E) (V/m) E^2, H^2, S	Magnetic Field (H) (A/m)	Power Density (S) (mW/ cm2) (E & H Fields)	Averaging Time (T_{av}) (minutes)
0.003 - 0.1	614	163	$(10^2, 10')$	6
0.1 - 3.0	614	16.3/f	$(10^2, 10^4/f^2)$	6
3 - 30	1842/f	16.3/f	$(900/f^2, 10^4/f^2)$	6
30 - 100	61.4	16.3/f	$(1.0, 10^4/f^2)$	6
100 - 300	61.4	0.163	1.0	6
300 - 3000			f/300	6
3000 - 15000			10	6
15000 - 300000		10		$616000/f^{1.2}$

B. RF INDUCED CURRENT RESTRICTIONS

Frequency Range (f) (MHz)	Maximum Current Through Both Feet (mA)	Maximum Current Through Each Foot (mA)	Contact Current (mA)
0.003 - 0.1	2ooof	looof	100of
0.1 - 100	200	100	100

c. PULSED RF FIELDS

Frequency Range (f) (MHz)	Peak Electric Field (E) (kV/m)	Peak Power Density/Pulse for Pulse Durations < 100 msec (row/cm²)
0.1 - 300000	100	(PEL) (T_{av}) / (5) (pulse width)

D. PARTIAL-BODY EXPOSURES

Frequency Range (f) (MHz)	Peak Value of Mean Squared Field (V^2/m^2 or A^2/m^2)	Equivalent Power Density (mw/cm^2)
0.1 - 300	< $20E^2$ or $20H^2$	
300 - 6000		< 20
6000 - 96000		< 20 $(f/6000)^{0.25}$
96000 - 300000		40

TABLE 6-2-1. PELS FOR UNCONTROLLED ENVIRONMENTS

A. RF EMF

Frequency Range (f) (MHz)	Electric Field (E) (V/m)	Magnetic Field (H) (A/m)	Power Density (S) (mW/cm^2) (E & H Fields)	Averaging Time (T-m) (minutes) E^2 or H^2	S
0.003 - 0.1	614	163	$(10^2, 10^6)$	6	6
0.1 - 1.34	614	16.3/f	$(10^2, 10^4/f^2)$	6	6
1.34 - 3.0	823.8/f	16.3/f	$(180/f^2, 10^4/f^2)$	$f^2/.3$	6
3.0 - 30	823.8/f	16.3/f	$(180/f^2, 10^4/f^2)$	30	6
30 - 100	27.5	$158.3/f^{1.668}$	$(0.2, 9.4x10^5/f^{3.336})$	30	$.0636 f^{1.337}$
100 - 300	27.5	0.0729	0.2	30	30
300 - 3000	-	f/1500	f/1500	30	-
3000 - 15000	-	f/1500	10	90000/f	
15000 - 300000	-	10		$616000/f^{1.2}$	

B. RF INDUCED CURRENT RESTRICTIONS

Frequency Range (f) (MHz)	Maximum Current Through Both Feet (mA)	Maximum Current Through Each Foot (mA)	Contact Current (mA)
0.003 - 0.1	900f	450f	450f
0.1 - 100	90	45	45

C. PULSED RF FIELDS

Frequency Range (f) (MHz)	Peak Electric Field (E) (kV/m)	Peak Power Density/Pulse for Pulse Durations < 100 msec (mW/cm^2)
0.1 - 300000	100	(PEL) (T_{avg}) / (5) (pulse width)

D. PARTIAL BODY EXPOSURES

Frequency Range (f) (MHz)	Peak Value of Mean Squared Field (V^2/m^2 or A^2/m^2)	Equivalent Power Density (mW/cm^2)
0.1 - 300	< $20E^2$ or $20H^2$	4
300 - 6000		f/1500
6000 - 30000		20
30000 - 300000		

Table 6-2-1. PELs for Uncontrolled Environments

TABLE 6-3-1. PELS FOR HPM AND EMP SIMULATOR SYSTEMS

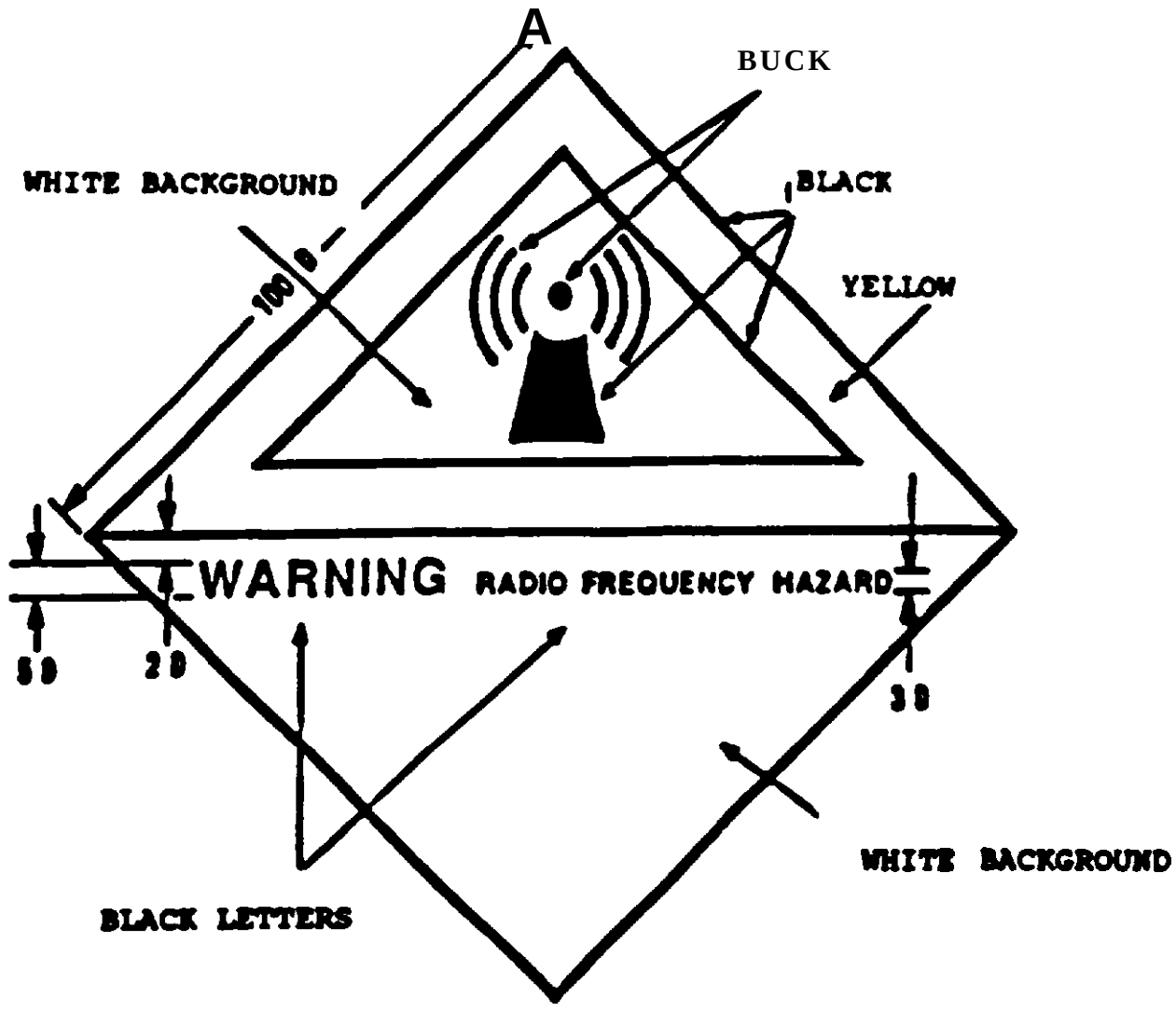
A. HPM (NARROW-BAND SYSTEMS)

Frequency Range (f) (MHz)	Peak Electric Field (E) (kV/m)	Maximum Fluence Level in Controlled Environments for Any Single Pulse or or Series of Multiple Pulses Lasting Less Than 10 seconds Within Any 6-Minute Period (J/cm^2)
100 - 300	200	0.36
300 - 3000	200	3.6(f/3000)
> 3000	200	3.6

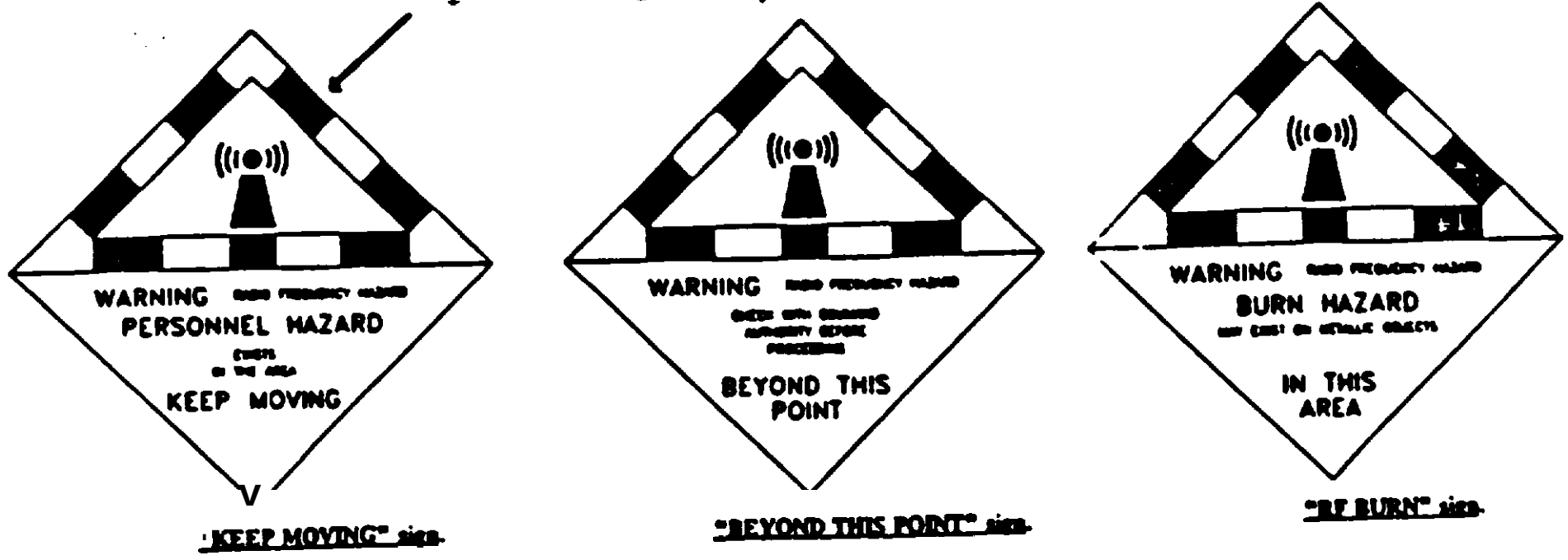
B. EMP SIMULATORS (BROAD-BAND SYSTEMS)

Frequency Range (f) (MHz)	Peak Electric Field (E) in Controlled Environments (kV/m)
0.1 - 300000	100

Table 6-3-1. PELs for HPM and EMP Simulator Systems



Optional Yellow/Red Border



"KEEP MOVING" sign

"BEYOND THIS POINT" sign

"RF BURN" sign

Figure 7-1. RF Hazard Warning Sign Format

SAMPLE FORMAT

LASER EXEMPTION NOTIFICATION

In accordance with Exemption No. 76EL-O1DOD issued to the Department of Defense on July 26, 1976, by the Commissioner of Food and Drugs, the following electronic product has been exempted from Food and Drug Administration (FDA) radiation safety performance standards prescribed in the Code *of* Federal Regulations, Title 21, Chapter 1, Subchapter J.

Laser Type _____

Manufacturer _____

Contract Number _____

Number of Lasers _____

National Stock Number (if available) _____

Exemption Qualification

Combat _____

Combat Training _____

Classified _____

Laser products exempted under 76EL-OIDOD will be labeled by the manufacturer as follows:

CAUTION

This electronic product has been exempted from FDA radiation safety performance standards prescribed in the Code of Federal Regulations, Title 21, Chapter I, Subchapter J, pursuant to Exemption No. 76EL-OIDOD issued on July 26, 1976. This product should not be used without adequate protective devices or procedures.